United States Department of Agriculture

Forest Service

North Central Forest Experiment Station

Resource Bulletin **NC-71**

Primary forest products industry and timber use, Missouri, 1980

James E. Blyth, Shelby Jones, and W. Brad Smith

SAW LOGS

CHARCOAL WOOD

COOPERAGE

PULPWOOD

VENEER LOGS

North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
Manuscript approved for publication May 11, 1983
December 1983

CONTENTS

	Page
Highlights	1
Primary forest industry—industrial roundwood	1
Timber removals for industrial roundwood	2
Saw logs	3
Charcoal wood	3
Cooperage	4
Pulpwood	4
Veneer logs	4
Other products	4
Primary mill residue	4
Outlook	5
Appendix	6
Study methods	6
Sampling error	6
Definition of terms	6
Common and scientific names of tree species mentioned	7
Tables 1-14	9

FOREWORD

This Bulletin contains the results of a detailed study of forest industry, industrial roundwood production, and associated primary mill wood and bark residue in Missouri in 1980. Such detailed information is necessary for intelligent planning and decision-making in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information to plan projects.

Special thanks are given to the primary wood-using firms that supplied information for this study. Their cooperation is greatly appreciated.

Quantities shown may vary slightly from one table to another because of rounding differences, but these differences are insignificant.

PRIMARY FOREST PRODUCTS INDUSTRY AND TIMBER USE, MISSOURI, 1980

James E. Blyth, *Principal Market Analyst,*
St. Paul, Minnesota,
Shelby Jones, *Forest Products Specialist,*
Missouri Department of Conservation,
Jefferson City, Missouri,
and **W. Brad Smith,** *Mensurationist,*
St. Paul, Minnesota

HIGHLIGHTS

- Since 1946 more than 2,200 small sawmills have ceased operations while the number of large and medium-size mills has nearly quadrupled.
- Industrial roundwood production in 1980 was 12 percent lower than in 1969, when industrial roundwood production was last estimated. Major declines were in charcoal wood and cooperage logs.
- Red oak, the leading species cut, provided 52 percent of the industrial roundwood.
- The Eastern Ozarks supplied 45 percent of all industrial roundwood.
- From a sustained yield basis, sweetgum, yellow-poplar, and cottonwood appear to have been overutilized in 1980, and black cherry, redcedar, sycamore, basswood, soft maple, white oak, elm, birch, hickory, and ash seem to have been underutilized.
- Saw log production, 82 percent of all industrial roundwood, was 406 million board feet—up 7 percent from 1969.
- Principal saw log species were red oak, white oak, shortleaf pine, cottonwood, and black walnut.
- Missouri continued to lead the Nation in cooperage log (28,500,000 board feet) and charcoal wood (241,000 cords) production.
- The charcoal industry has shifted from heavy dependence on roundwood in 1969 to intensive use of Missouri primary wood-using mill residue.
- Coarse mill residue is in strong demand for manufacturing pulp and charcoal.
- Great progress has been made since 1969 in finding markets for residue. However, additional markets for fine and bark residue generated at primary wood-using mills are needed because more than one-fourth of the bark and more than three-fifths of the fine residue was not used in 1980.

PRIMARY FOREST INDUSTRY—INDUSTRIAL ROUNDWOOD

Sawmills dominate the active (operating) primary wood-using mill population in Missouri. Out of an estimated 599 active mills in 1980, 486 were sawmills. Other important mill groups include cooperage mills, charcoal plants, and treating plants.

The active sawmill population has steadily declined since World War II. Nearly 2,600 mills operated in 1946, but the number fell to less than 1,000 in 1958 and to 549 in 1969. Since 1946, more than 2,200 small sawmills (cutting less than one million board feet annually) have dropped out of production while the number of large- and medium-size mills has nearly quadrupled. More than one-half of the mills cutting more than one million board feet annually are in the Eastern Ozark Unit (fig. 1).

Eighty-five cooperage mills operated in 1946. Then the industry consolidated as the active mills dropped to 36 in 1958. Since then the number of operating mills has remained relatively steady although falling to 30 in 1980. All Inventory Units have cooperage mills, but the heaviest concentration is in the Eastern Ozarks.

During the late 1940's and the 1950's, the charcoal industry expanded rapidly. Only 3 mills produced charcoal in 1946, but the number had jumped to 60

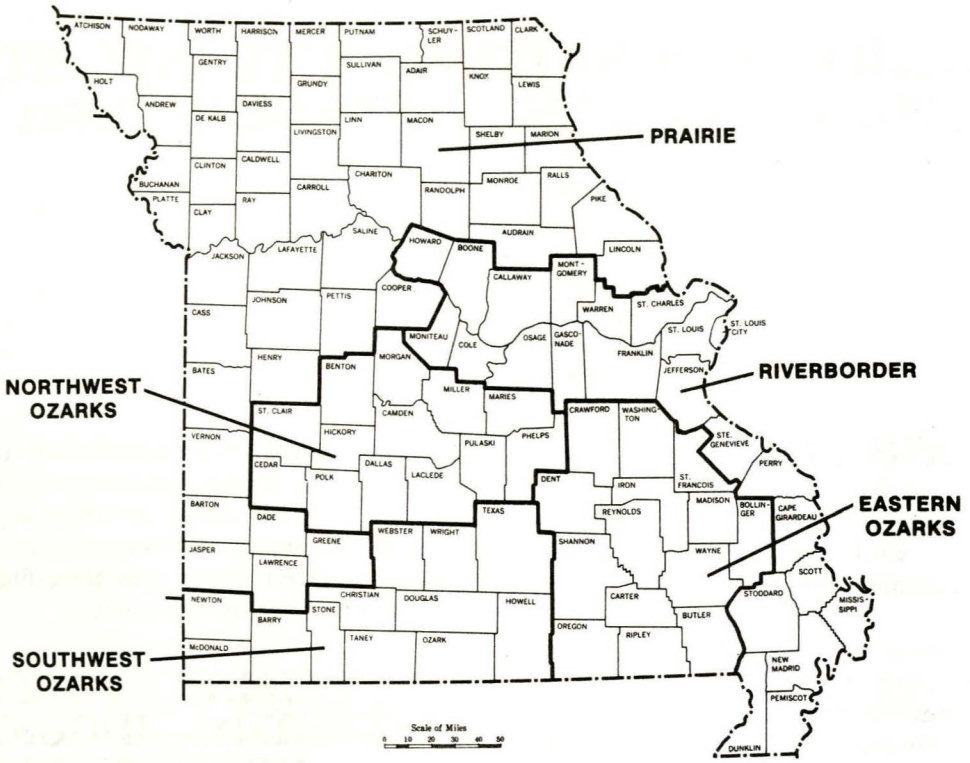

Figure 1.—*Inventory Units in Missouri. Inventory Units are the geographical areas used by the Forest Inventory and Analysis Project (formerly Resources Evaluation) to report periodic inventories and use of the Nation's forest resources.*

by 1958 before falling to a fairly stable 36 in 1980. Most (all but two) of the plants are about evenly distributed between the three Ozark Units.

In contrast to the decline in charcoal plants, the wood-treating industry has steadily expanded from 6 plants in 1946 to 28 in 1980. All Units contain treating plants although the largest concentration is in the Southwestern Ozarks. These plants process and treat wood posts with preservatives.

Industrial roundwood production in 1980 rose or fell in each Unit by at least 13 percent since 1969. Overall, the decline in the State was 12 percent:

Unit	Production 1969 (Thousand cubic feet)	1980	Change (Percent)
Eastern Ozarks	45,604	39,635	−13
Southwestern Ozarks	17,940	14,639	−18
Northwestern Ozarks	9,388	10,670	+14
Prairie	11,359	13,594	+20
Riverborder	14,674	9,020	−39
Total	98,965	87,558	−12

The Eastern Ozarks continued to dominate the harvest by supplying 45 percent; each of the other Units supplied at least 10 percent.

Red oak provided more than half (52 percent) of the harvest followed by white oak (20 percent) and shortleaf pine (6 percent). Other important species included cottonwood, black walnut, hickory, and sycamore.

TIMBER REMOVALS FOR INDUSTRIAL ROUNDWOOD

Estimated timber removals for industrial roundwood (from growing stock on commercial forest land) were 76.7 million cubic feet. Timber removals in each inventory unit per thousand acres of commercial forest land[1] were:

[1]*Area of commercial forest land in 1972 at the time of the last forest inventory in Missouri.*

Unit	Removals/thousand acres (Cubic feet)	(Cords)
Eastern Ozarks	8,346	106
Southwestern Ozarks	5,532	70
Northwestern Ozarks	4,580	58
Prairie	6,455	82
Riverborder	4,015	51
All Units	6,200	78

Cutting of growing stock (on a commercial forest area basis) was heaviest in the Eastern Ozarks and lightest in the Riverborder Unit. Harvest intensity of growing stock was light in all Units.

Timber removals (for industrial roundwood) in 1980 by species were compared with net annual growth determined during the previous Missouri forest inventory (1971). These comparisons show in a rough way which species may have been overcut or undercut in 1980 (in terms of sustained yield). Species with removals greater than 110 percent of net annual growth or less than 75 percent of growth were:

Species	Removals (Percent of net annual growth)
Sweetgum	369
Yellow-poplar	189
Cottonwood	152
Beech	111
Black walnut	67
Blackgum	58
Shortleaf pine	54
Red oak	51
Black cherry	43
Red cedar	39
Sycamore	36
Basswood	35
Soft maple	35
White oak	33
Elm	32
Birch	31
Hickory	24
Ash	16

These indicators of possible over- or underutilization should be used cautiously because (1) wood procurement volumes change from year to year, (2) net annual growth used in the comparison was for 1971, (3) sampling errors may be high for individual minor species because only 18 percent of the sawmills were sampled, (4) stand-age structure may mask the extent of under- or overutilization, and (5) apparent over- or undercutting may be a temporary timber management strategy to improve stand structure and species mix.

Allowing for these cautions, sweetgum, yellow-poplar, and cottonwood appear to have been overcut and black cherry, redcedar, sycamore, basswood, soft maple, white oak, elm, birch, hickory, and ash seem to have been undercut in 1980.

SAW LOGS

In 1980, 82 percent of the industrial roundwood harvest was saw logs. Loggers cut 406 million board feet of saw logs in Missouri, up 7 percent from the last study estimate in 1969. All but 8 percent was hardwood. Principal species harvested were red oak, white oak, shortleaf pine, cottonwood, and black walnut.

Only 7 million board feet of saw logs were shipped to sawmills in other States; Iowa and Kansas customers procured the majority. Black walnut was the principal species shipped out-of-State.

Compared to 1969, major gains in output were in red oak and shortleaf pine. Production dropped 4 million board feet or more from 1969 for each of five species—white oak, soft maple, sycamore, elm, and sweetgum.

More than half of the shortleaf pine, red oak, and white oak was cut in the Eastern Ozark Unit, the leading saw-log producing region. The Prairie Unit was the primary supplier of black walnut and cottonwood—this Unit contains the largest volume of walnut and the second largest supply of cottonwood in the State.

Missouri sawmills imported 15 million board feet of saw logs from seven States, primarily Illinois. Red oak, white oak, and black walnut led the list of saw log imports. Mills in the Prairie and Riverborder Units procured most of the imports.

CHARCOAL WOOD

Missouri continues to be the top-producing State for charcoal wood although the industry has matured and consolidated. Total charcoal wood production dropped from 285,000 cords in 1969 to 241,000 cords in 1980. However, the industry has shifted from heavy dependence on roundwood to intensive use of Missouri primary wood-using mill residue (slabs and edgings). Roundwood harvesting for charcoal dropped from 238,000 cords in 1969 to 88,000 cords in 1980. During this period, use of Missouri primary mill wood

residue for charcoal rose from 47,000 cords to 153,000 cords.

Oak constituted almost 9 out of 10 cords of charcoal wood cut in 1980. The Eastern Ozarks supplied three-fifths of the roundwood and more than one-half (53 percent) of the mill residue for charcoal. The industry procures all of its wood requirements within the State.

COOPERAGE

Missouri led the Nation in cooperage log production with 28.5 million board feet in 1980. All of the harvest was white oak for manufacturing tight cooperage. Producers shipped only 2 percent out-of-State for barrel-making.

Several changes in the cooperage and distilling industries led to a 47-percent decline in the cooperage log harvest since 1969. Marginal mills dropped out of production as competition for high quality white oak stiffened. Markets expanded for light whiskeys, which can be aged in reconditioned barrels and consequently lessens the demand for new barrels. Consumers' preferences for alcoholic beverages changed and broadened leaving less market share for the whiskey distillers.

Missouri cooperage mills received 31.5 million board feet of logs. These mills were widely dispersed with the largest concentration in the Eastern Ozarks. Four States—Illinois, Iowa, Arkansas, and Kentucky—supplied a total of 3.6 million board feet to the Missouri mills.

PULPWOOD

Missouri produced 105,000 cords of pulpwood of which 81,000 cords were residue from sawmills, veneer mills, and other mills.

Pulpwood production grew rapidly from 22,000 cords in 1966 to a peak of 136,000 cords in 1974. Since 1974, annual output has ranged from 99,000 to 132,000 cords. Softwoods are a minor part of the pulpwood mix. Initial nominal use of Missouri wood residue as pulpwood began in 1965 with swift expansion to a peak of 106,000 cords in 1976. Roundwood pulpwood output peaked in 1972 although residue has been a more important source since 1968.

All of the pulpwood was harvested in the Eastern Ozark, Prairie, and Riverborder Units. Ten pulpmills in Missouri, Illinois, Kentucky, Iowa, Oklahoma, and Tennessee received Missouri pulpwood (from roundwood and residue) in 1980.

VENEER LOGS

Veneer log production was 3.3 million board feet,[2] one-half of the output in 1966, but 24 percent above 1976. Most of the veneer logs were black walnut, cottonwood, and white oak. Demand for cottonwood climbed briskly from the nominal harvest in 1976.

One-third of the harvest was exported to Indiana, (the primary out-of-State market) Illinois, and Ohio. Walnut was the preferred export species to other States.

OTHER PRODUCTS

Other industrial roundwood products (3 percent of all industrial roundwood) included posts (processed at treating plants), handle bolts, and shavings bolts. About 2.8 million commercial posts were cut principally from oak and shortleaf pine. Posts were harvested chiefly in the Northwestern and Eastern Ozarks Units. Handle bolts came primarily from the Riverborder Unit; hickory was the preferred species.

SUMMARY-INDUSTRIAL ROUNDWOOD

Production of all industrial roundwood products was last determined in 1969. Industrial roundwood production for each product in 1969 and 1980 was:

Product	1969	1980
Saw logs (million bd. ft.)	379	406
Charcoal wood (thousand cords)	239	88
Cooperage logs (million bd. ft.)	54	28
Pulpwood (thousand cords)	24	25
Veneer logs (million bd. ft.)	5	3
Posts (thousand pieces)	NA[3]	2,835
Other (thousand cubic feet)	1,600	551

PRIMARY MILL RESIDUE

During 1980, Missouri primary wood-using mills (except pulpmills) generated 588,000 green tons of coarse residue, 377,000 green tons of fine residue, and 258,000 green tons of bark. Coarse residue is

[2]*Does not include log exports to other countries, except Canada.*

[3]*Not available. Commercial (industrial) and noncommercial post production was 4,077 thousand pieces.*

wood suitable for chipping such as slabs, edgings, and veneer cores. The Eastern Ozark Unit produces the highest concentration of residue: 42 percent of the coarse residue and bark and 41 percent of the fine residue.

A comparison by residue class of the percentage used that was generated in 1969 with the same percentage in 1980 shows great progress has been made in finding uses for coarse residue and bark:

Kind of residue	Percent used 1969	1980
Coarse	54	89
Fine	22	37
Bark	[4]45	74

Principal uses in 1980 for coarse residue were in pulp manufacturing (fiber products) and charcoal production. Coarse residue use for fuel was low compared with many States because, in Missouri, the fiber and charcoal markets for this residue are competitive and well established and because roundwood from oak, hickory, and other desirable fuelwood species is readily available.

Some progress has been made since 1969 in increasing the use of fine residue. Primary uses of fine residue are for charcoal, industrial fuel, soil conditioners, mulch, livestock bedding, and poultry litter. Many Missouri mills could increase their competitive position by finding additional uses or new markets for sawdust and other fine residue.

Charcoal and fuelwood are the chief uses for bark. In charcoal manufacturing the bark is merely a supplemental raw material attached to the desired coarse residue.

[4]*Estimate based on ratio of bark to coarse residue used in 1980.*

Finding markets for residue is usually not a problem for larger mills. Unused residue is most likely to be found at smaller mills and some medium-sized mills where residue storage may not be a problem and the volume available may be insufficient to attract customers requiring large quantities. Unused residue is often piled, used for landfill, or burned as waste.

Customers looking for unused residue will find the most in the Eastern Ozark and Prairie Units. More than 100,000 tons of fine residue produced in the Eastern Ozarks was unused in 1980.

OUTLOOK

When economic activity turns up, industrial roundwood production should grow, particularly sawlog production. Sawmills will continue to dominate Missouri forest industry. Charcoal wood and cooperage log production will probably remain near the 1980 level. The number of large and medium sawmills will likely increase as the number of small sawmills declines. As a result, lumber output per mill will continue to rise. More consolidation of production in the charcoal and cooperage industries is likely, leading to a further decline in the number of active mills.

Additional market outlets should become available for fine residue and bark. If current trends continue, more than 90 percent of the fine residue will be used by 1999 and more than 90 percent of the bark by 1985.

APPENDIX

STUDY METHODS

Data for this publication came from canvassing with a formal questionnaire some of the sawmills and all of the other primary wood-using mills that use Missouri logs and bolts. All canvassing in Missouri (except two pulpmills) was initially done by personal contact, telephone, and mail by the Missouri Department of Conservation, Forestry Division (MDC). For a few Missouri mills that did not furnish complete data, MDC utilization and marketing specialists provided estimates based on prior knowledge and contacts. The North Central Forest Experiment Station (using formal questionnaires) contacted by mail two Missouri pulpmills and all out-of-State mills using Missouri roundwood; follow-up on nonrespondents was by mail and telephone. The Station edited and compiled the data.

Missouri sawmills, cooperage mills, charcoal plants, and preservative plants were stratified into size-classes and sample-sizes as follows:

Sawmills

Size-class (Thousand board feet/year)	Sample-size (Mills)
3,001 +	All
1,001-3,000	1 out of 5
101-1,000	1 out of 10
100-	1 out of 20

Cooperage mills

(Thousand board feet/year)	(Mills)
1,001 +	All
1,000-	1 out of 4

Charcoal plants

(Tons/year)	(Number)
4,001 +	All
2,001-4,000	1 out of 2
2,000-	1 out of 4

Preservative plants

All	1 out of 3

Using a random start for a stratum within a mill type, sample mills were selected within an Inventory Unit, and selection continued within each succeeding Inventory Unit until the sample was complete for that stratum. This procedure was repeated for each stratum. About 18 percent of the sawmills, 63 percent of the cooperage mills, 56 percent of the charcoal plants, and 32 percent of the preservative plants were canvassed. All other mill types were sampled 100 percent.

Logging utilization factors developed from a 1971-1972 study in Missouri were used to estimate growing stock and sawtimber removals for industrial roundwood in 1980.

SAMPLING ERROR

All the reported figures are estimates based on the sampling procedures described above that are designed to give accurate estimates of roundwood production. A measure of reliability of these figures is given by sampling errors. This sampling error means that the chances are two out of three that the results for the sample differ by no more than the amount indicated from the results that would have been obtained if a 100 percent sample had been made. Sampling errors by type of product were:

Type of product	Sampling error (Percent)	Production
Saw logs	± 1.83	405,501 MBF
Cooperage logs	± 9.80	28,473 MBF
Posts	±16.27	2,835,000 pieces
Charcoal wood	± 5.29	88,388 cords

Because all other primary wood-using mills were canvassed, there is no sampling error for the roundwood products they use.

DEFINITION OF TERMS

Timber removals for industrial roundwood.—The volume of sound bole wood (between a 1-foot stump and a minimum top diameter of 4.0 inches outside bark or to a point where the central stem breaks into limbs) in poletimber and sawtimber growing-stock trees on commercial forest land removed annually for industrial roundwood products (including logging residues).

Sawtimber removals for industrial roundwood.—The volume of sound bole wood (between a 1-foot stump and the point on the bole above which a saw log cannot be produced) in sawtimber growing-stock trees on commercial forest land removed annually for industrial roundwood products (including logging residues). The minimum saw log top is 7.0 inches diameter outside bark for softwoods and 9.0 inches diameter outside bark for hardwoods.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by

statute or administrative regulation. Generally, this includes areas suitable for growing crops of industrial wood in excess of 20 cubic feet per acre annually.

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, commercial posts, cooperage logs, handle bolts, shaving bolts, charcoal bolts, and chips from roundwood. Does not include fuelwood or noncommercial posts.

Industrial roundwood production.—The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood receipts.—The quantity of industrial roundwood received in a geographic area regardless of the geographic source.

Consumption.—The quantity of a commodity, such as pulpwood, utilized.

Primary forest products industry.—All mills processing roundwood, including chips from roundwood.

Growing-stock trees.—All live poletimber and sawtimber trees of commercial species except rough and rotten trees. Poletimber trees are from 5.0 to 8.9 inches d.b.h. for softwoods and from 5.0 to 10.9 inches d.b.h. for hardwoods. Softwood sawtimber trees are 9.0 inches d.b.h. or larger; hardwood sawtimber trees are 11.0 inches d.b.h. or larger.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark not utilized for principal products at manufacturing plants using roundwood. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED

Softwoods
- Cypress .... *Taxodium distichum* var. *distichum*
- Shortleaf pine ..... *Pinus echinata*
- Eastern redcedar ..... *Juniperus virginiana*

Hardwoods
- Ash
  - White ash ..... *Fraxinus americana*
  - Green ash ..... *Fraxinus pennsylvanica*
  - Blue ash ..... *Fraxinus quadrangulata*
- American basswood ..... *Tilia americana*
- American beech ..... *Fagus grandifolia*
- River birch ..... *Betula nigra*
- Tupelo and blackgum
  - Blackgum ..... *Nyssa sylvatica* var. *biflora*
  - Black tupelo .... *Nyssa sylvatica* var. *sylvatica*
  - Water tupelo ..... *Nyssa aquatica*
- Black cherry ..... *Prunus serotina*
- Eastern cottonwood ..... *Populus deltoides*
- Elm
  - Winged elm ..... *Ulmus alata*
  - American elm ..... *Ulmus americana*
  - Slippery elm ..... *Ulmus rubra*
  - Rock elm ..... *Ulmus thomasii*
- Hickory
  - Pecan ..... *Carya illinoensis*
  - Shellbark hickory ..... *Carya laciniosa*
  - Shagbark hickory ..... *Carya ovata*
  - Mockernut hickory ..... *Carya tomentosa*
  - Water hickory ..... *Carya aquatica*
  - Bitternut hickory ..... *Carya cordiformis*
  - Pignut hickory ..... *Carya glabra* var. *glabra*
  - Black hickory ..... *Carya texana*
- Hard maple
  - Black maple ..... *Acer nigrum*
  - Sugar maple ..... *Acer saccharum*
- Soft maple
  - Red maple ..... *Acer rubrum* var. *rubrum*
  - Silver maple ..... *Acer saccharinum*
- Red oak
  - Cherrybark oak ..... *Quercus falcata* var. *pagodaefolia*
  - Northern red oak ..... *Quercus rubra*
  - Shumard oak ..... *Quercus shumardii* var. *shumardii*
  - Scarlet oak ..... *Quercus coccinea*
  - Southern red oak . *Quercus falcata* var. *falcata*
  - Black oak ..... *Quercus velutina*
  - Shingle oak ..... *Quercus imbricaria*
  - Blackjack oak ..... *Quercus marilandica*
  - Water oak ..... *Quercus nigra*
  - Pin oak ..... *Quercus palustris*
  - Willow oak ..... *Quercus phellos*
- White oak
  - White oak ..... *Quercus alba*
  - Bur oak ..... *Quercus macrocarpa*
  - Swamp chestnut oak ..... *Quercus michauxii*
  - Chinkapin oak ..... *Quercus muehlenbergii*
  - Swamp white oak ..... *Quercus bicolor*
  - Overcup oak ..... *Quercus lyrata*
  - Post oak ..... *Quercus stellata* var. *stellata*
- Sweetgum ..... *Liquidambar styraciflua*
- American sycamore ..... *Tilia americana*
- Black walnut ..... *Juglans nigra*
- Yellow-poplar ..... *Liriodendron tulipifera*

Other hardwoods

Black locust	*Robinia pseudoacacia*
Common persimmon	*Diospyros virginiana*
Flowering dogwood	*Cornus florida*
Honeylocust	*Gleditsia triacanthos*
Red mulberry	*Morus rubra*
Sugarberry	*Celtis laevigata*
Osage-orange	*Maclura pomifera*
Butternut	*Juglans cinerea*
Black willow	*Salix nigra*
Boxelder	*Acer negundo*
Cucumbertree	*Magnolia acuminata*
Hackberry	*Celtis occidentalis*
Kentucky coffeetree	*Gynocladus dioicus*
Northern catalpa	*Catalpa speciosa*
Ohio buckeye	*Aesculus glabra*
Sassafras	*Sassafras albidum*

TABLE TITLES

Table 1.—Industrial roundwood production by type of product and species in Missouri, 1980

Table 2.—Number of active primary wood-using mills in Missouri, 1946, 1958, 1969, and 1980

Table 3.—Industrial roundwood production by species and Inventory Unit in Missouri, 1980

Table 4.—Timber removals from growing stock on commercial forest land for industrial roundwood by species and Inventory Unit in Missouri, 1980

Table 5.—Timber removals from sawtimber on commercial forest land for industrial roundwood by species and Inventory Unit in Missouri, 1980

Table 6.—Saw log production by species in Missouri, 1969 and 1980

Table 7.—Saw log production by Inventory Unit, species, and State of destination, Missouri, 1980

Table 8.—Saw log receipts in Missouri by Inventory Unit, species, and State of origin, 1980

Table 9.—Pulpwood production in Missouri by species groups, 1965, 1970, 1975, and 1980

Table 10.—Charcoal wood production by species and Inventory Unit in Missouri, 1980

Table 11.—Veneer log production in Missouri by species, 1966, 1970, 1976, and 1980

Table 12.—Veneer log production by species and State of destination, Missouri, 1980

Table 13.—Industrial roundwood production by type of product, Inventory Unit, and species group, Missouri, 1980

Table 14.—Residue produced at primary wood-using mills by type of material, type of use, and Inventory Unit, Missouri, 1980

Table.1--Industrial roundwood production by type of product and species in Missouri, 1980

Species	Sawlogs		Veneer logs		Pulpwood		Charcoal wood		Cooperage logs		Posts		Other products	All products
	MBF[1]	MCF[2]	MBF[1]	MCF[2]	Cords[3]	MCF[2]	Cords[3]	MCF[2]	MBF[1]	MCF[2]	Thousand pieces	MCF[2]	MCF[2]	MCF[2]
Softwoods														
Cypress	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shortleaf pine	27,696	4,811	0	0	766	61	613	43	0	0	695	535	0	5,450
Redcedar	3,140	670	0	0	0	0	0	0	0	0	0	0	152	822
Total	30,836	5,481	0	0	766	61	613	43	0	0	695	535	152	6,272
Hardwoods														
Ash	2,976	510	0	0	409	33	633	45	0	0	0	0	4	592
Basswood	257	41	0	0	325	25	0	0	0	0	0	0	0	66
Beech	45	7	0	0	0	0	0	0	0	0	0	0	0	7
Birch	1,922	328	0	0	87	6	0	0	0	0	0	0	4	338
Blackgum	2,191	348	0	0	282	21	498	34	0	0	0	0	1	404
Black cherry	369	59	0	0	209	16	322	22	0	0	0	0	0	97
Cottonwood	21,431	3,307	1,072	245	2,315	182	0	0	0	0	0	0	77	3,811
Elm	1,569	247	0	0	1,281	99	823	56	0	0	0	0	0	402
Pecan (hickory)	220	38	62	14	0	0	0	0	0	0	0	0	0	52
Other hickory	12,770	2,182	32	7	0	0	4,453	310	0	0	0	0	198	2,697
Hard maple	3,031	517	0	0	139	9	362	26	0	0	0	0	0	552
Soft maple	6,088	967	0	0	2,789	219	191	12	0	0	0	0	77	1,275
Red oak	228,984	40,876	0	0	6,447	509	49,392	3,459	0	0	1,750	1,007	1	45,852
White oak	56,395	10,067	975	224	6,899	545	28,879	2,023	28,473	4,693	375	217	4	17,773
Sweetgum	7,772	1,234	0	0	106	7	0	0	0	0	0	0	0	1,241
Sycamore	12,237	1,942	57	13	2,602	206	1,922	134	0	0	12	6	8	2,309
Black walnut	15,448	3,384	1,075	233	0	0	300	21	0	0	0	0	0	3,638
Yellow-poplar	785	125	0	0	28	1	0	0	0	0	0	0	0	126
Other hardwoods	175	28	2	0	0	0	0	0	0	0	3	1	25	54
Total	374,665	66,207	3,275	736	23,918	1,878	87,775	6,142	28,473	4,693	2,140	1,231	399	81,286
All species	405,501	71,688	3,275	736	24,684	1,939	88,388	6,185	28,473	4,693	2,835	1,766	551	87,558

1/Thousand board feet, International 1/4-inch rule.

2/Thousand cubic feet.

3/Standard cords, unpeeled.

Table 2.--Number of active primary wood-using mills in Missouri, 1946, 1958, 1969, and 1980

Kind of mill[1]	1946	1958	1969	1980
Sawmills				
Large[2]	2	5	7	8
Medium[3]	43	103	117	163
Small	2,548	882	425	315
Subtotal	2,593	990	549	486
Cooperage mills	85	36	36	30
Veneer mills	6	3	4	4
Pulp mills	-	2	2	2
Charcoal plants	3	60	52	36
Handle mills	19	12	7	10
Treating plants	6	14	22	28
Miscellaneous[4]	94	44	9	3
Total	2,806	1,161	681	599

[1] Number of active sawmills estimated in 1980.

[2] Annual lumber production of 5 million board feet or more.

[3] Annual lumber production of 1.000 to 4.999 million board feet.

[4] Includes excelsior mills, novelty plants, shaving mills, etc.

Table 3.--Industrial roundwood production by species and Inventory Unit in Missouri, 1980

(In thousand cubic feet)

Species	All Units	Eastern Ozarks Unit	Southwestern Ozarks Unit	Northwestern Ozarks Unit	Prairie Unit	Riverborder Unit
Softwoods						
Shortleaf pine	5,450	3,642	1,633	88	0	87
Redcedar	822	18	506	213	0	85
Total	6,272	3,660	2,139	301	0	172
Hardwoods						
Ash	592	57	16	98	170	251
Basswood	66	0	2	1	61	2
Beech	7	0	0	1	4	2
Birch	338	3	8	10	268	49
Blackgum	404	276	76	20	4	28
Black cherry	97	37	14	8	17	21
Cottonwood	3,811	52	9	78	2,467	1,205
Elm	402	120	59	49	125	49
Pecan (hickory)	52	5	0	25	16	6
Other hickory	2,697	1,161	425	298	398	415
Hard maple	552	247	48	50	48	159
Soft maple	1,275	85	39	108	689	354
Red oak	45,852	24,949	8,377	5,564	3,742	3,220
White oak	17,773	7,963	2,357	2,404	2,740	2,309
Sweetgum	1,241	1	0	670	548	22
Sycamore	2,309	589	287	289	659	485
Black walnut	3,638	429	782	693	1,546	188
Yellow-poplar	126	0	0	0	44	82
Other hardwoods	54	1	1	3	48	1
Total	81,286	35,975	12,500	10,369	13,594	8,848
All species	87,558	39,635	14,639	10,670	13,594	9,020

Table 4.--Timber removals from growing stock on commercial forest land for industrial roundwood by species and Inventory Unit in Missouri, 1980

(In thousand cubic feet)

Species	All Units	Eastern Ozarks Unit	South-western Ozarks Unit	North-western Ozarks Unit	Prairie Unit	River-border Unit
Softwoods						
Shortleaf pine	5,756	3,861	1,739	60	0	96
Redcedar	836	18	508	222	0	88
Total	6,592	3,879	2,247	282	0	184
Hardwoods						
Ash	694	58	22	108	206	300
Basswood	57	0	2	1	52	2
Beech	10	0	0	1	6	3
Birch	429	4	10	13	338	64
Blackgum	362	252	63	19	4	24
Black cherry	75	24	11	8	13	19
Cottonwood	4,281	60	10	89	2,768	1,354
Elm	325	100	46	40	102	37
Pecan (hickory)	61	5	0	31	19	6
Other hickory	3,221	1,414	518	274	509	506
Hard maple	677	316	62	49	61	189
Soft maple	1,168	81	38	99	616	334
Red oak	37,911	20,597	6,950	4,441	3,253	2,670
White oak	15,617	6,585	2,169	2,100	2,627	2,136
Sweetgum	1,188	1	0	642	525	20
Sycamore	2,079	508	266	262	596	447
Black walnut	1,738	203	372	331	740	92
Yellow-poplar	121	0	0	0	42	79
Other hardwoods	55	1	1	3	49	1
Total	70,069	30,209	10,540	8,511	12,526	8,283
All species	76,661	34,088	12,787	8,793	12,526	8,467

Table 5.--Timber removals from sawtimber on commercial forest land for industrial roundwood by species and Inventory Unit in Missouri, 1980

(In thousand board feet)[1/]

Species	All Units	Eastern Ozarks Unit	South-western Ozarks Unit	North-western Ozarks Unit	Prairie Unit	River-border Unit
Softwoods						
Shortleaf pine	28,746	19,342	8,851	36	0	517
Redcedar	3,897	81	2,313	1,086	0	417
Total	32,643	19,423	11,164	1,122	0	934
Hardwoods						
Ash	3,283	256	102	502	989	1,434
Basswood	304	0	13	7	278	6
Beech	48	0	0	7	27	14
Birch	2,071	21	45	64	1,632	309
Blackgum	2,046	1,438	344	107	26	131
Black cherry	386	114	54	44	69	105
Cottonwood	24,513	348	61	526	16,008	7,570
Elm	1,722	560	250	221	508	183
Pecan (hickory)	295	23	0	153	91	28
Other hickory	14,893	6,657	2,436	1,195	2,456	2,149
Hard maple	3,240	1,527	301	215	296	901
Soft maple	6,519	475	219	571	3,331	1,923
Red oak	141,613	76,999	25,986	16,153	12,442	10,033
White oak	65,108	26,529	9,318	8,667	11,404	9,190
Sweetgum	6,940	9	0	3,754	3,069	108
Sycamore	11,677	2,825	1,506	1,484	3,314	2,548
Black walnut	7,795	894	1,669	1,488	3,329	415
Yellow-poplar	704	0	0	0	245	459
Other hardwoods	305	3	9	17	271	5
Total	293,462	118,678	42,313	35,175	59,785	37,511
All species	326,105	138,101	53,477	36,297	59,785	38,445

[1/] International 1/4-inch rule.

Table 6.--Saw log production by species in Missouri, 1969 and 1980

(In thousand board feet)[1/]

Species	1969	1980	Change
Softwoods			
Cypress	187	0	-187
Shortleaf pine	15,235	27,696	12,461
Redcedar	2,567	3,140	573
Other softwoods	489	0	-489
Total	18,478	30,836	12,358
Hardwoods			
Ash	3,549	2,976	-573
Basswood	309	257	-52
Beech	273	45	228
Birch	484	1,922	1,438
Blackgum	2,750	2,191	-559
Black cherry	146	369	223
Cottonwood	24,557	21,431	-3,126
Elm	6,123	1,569	-4,554
Hickory[2/]	15,060	12,990	-2,070
Hard maple	1,670	3,031	1361
Soft maple	15,888	6,088	-9,800
Red oak	184,852	228,984	44,132
White oak	66,265	56,395	-9,870
Sweetgum	3,306	7,772	4,466
Sycamore	20,190	12,237	-7,953
Black walnut	12,593	15,448	2,855
Yellow-poplar	958	785	-173
Other hardwoods	1979	175	-1804
Total	360,952	374,665	13,713
All species	379,430	405,501	26,071

[1/] International 1/4-inch rule.

[2/] Includes pecan hickories.

Table 7.--Saw log production by Inventory Unit, species, and State of destination, Missouri, 1980

(In thousand board feet)[1/]

	ALL UNITS					
Species	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Softwoods						
Cypress	0	0	0	0	0	0
Shortleaf pine	27,696	27,398	0	0	0	298
Redcedar	3,140	3,140	0	0	0	0
Total	30,836	30,538	0	0	0	298
Hardwoods						
Ash	2,976	2,917	59	0	0	0
Basswood	257	205	52	0	0	0
Beech	45	45	0	0	0	0
Birch	1,922	1,884	38	0	0	0
Blackgum	2,191	2,191	0	0	0	0
Black cherry	369	365	4	0	0	0
Cottonwood	21,431	20,917	399	32	0	83
Elm	1,569	1,536	33	0	0	0
Pecan (hickory)	220	220	0	0	0	0
Other hickory	12,770	12,644	109	11	0	6
Hard maple	3,031	3,012	19	0	0	0
Soft maple	6,088	5,426	574	88	0	0
Red oak	228,984	228,327	540	76	0	41
White oak	56,395	55,674	666	23	28	4
Sweetgum	7,772	7,769	0	0	0	3
Sycamore	12,237	12,230	7	0	0	0
Black walnut	15,448	11,773	46	2,967	442	220
Yellow-poplar	785	785	0	0	0	0
Other hardwoods	175	100	63	12	0	0
Total	374,665	368,020	2,609	3,209	470	357
All species	405,501	398,558	2,609	3,209	470	655

(Table 7 continued)

(Table 7 continued)

EASTERN OZARK UNIT

Species	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Softwoods						
Cypress	0	0	0	0	0	0
Shortleaf pine	18,626	18,328	0	0	0	298
Redcedar	84	84	0	0	0	0
Total	18,710	18,412	0	0	0	298
Hardwoods						
Ash	218	218	0	0	0	0
Basswood	0	0	0	0	0	0
Beech	0	0	0	0	0	0
Birch	15	15	0	0	0	0
Blackgum	1,557	1,557	0	0	0	0
Black cherry	116	116	0	0	0	0
Cottonwood	328	328	0	0	0	0
Elm	594	594	0	0	0	0
Pecan (hickory)	0	0	0	0	0	0
Other hickory	5,991	5,988	0	0	0	3
Hard maple	1,442	1,442	0	0	0	0
Soft maple	525	525	0	0	0	0
Red oak	125,132	125,091	0	0	0	41
White oak	26,049	26,049	0	0	0	0
Sweetgum	3	0	0	0	0	3
Sycamore	3,076	3,076	0	0	0	0
Black walnut	1,825	1,759	0	0	66	0
Yellow-poplar	0	0	0	0	0	0
Other hardwoods	4	4	0	0	0	0
Total	166,875	166,762	0	0	66	47
All species	185,585	185,174	0	0	66	345

(Table 7 continued on next page)

(Table 7 continued)

SOUTHWEST OZARK UNIT

Species	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Softwoods						
Cypress	0	0	0	0	0	0
Shortleaf pine	8,566	8,566	0	0	0	0
Redcedar	2,241	2,241	0	0	0	0
Total	10,807	10,807	0	0	0	0
Hardwoods						
Ash	91	91	0	0	0	0
Basswood	15	15	0	0	0	0
Beech	0	0	0	0	0	0
Birch	43	43	0	0	0	0
Blackgum	377	377	0	0	0	0
Black cherry	58	58	0	0	0	0
Cottonwood	58	58	0	0	0	0
Elm	272	272	0	0	0	0
Pecan (hickory)	0	0	0	0	0	0
Other hickory	2,201	2,201	0	0	0	0
Hard maple	285	285	0	0	0	0
Soft maple	247	247	0	0	0	0
Red oak	42,805	42,805	0	0	0	0
White oak	7,321	7,321	0	0	0	0
Sweetgum	0	0	0	0	0	0
Sycamore	1,620	1,620	0	0	0	0
Black walnut	3,474	3,413	0	0	61	0
Yellow-poplar	0	0	0	0	0	0
Other hardwoods	10	10	0	0	0	0
Total	58,877	58,816	0	0	61	0
All species	69,684	69,623	0	0	61	0

(Table 7 continued)

(Table 7 continued)

NORTHWEST OZARK UNIT

Species	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Softwoods						
Cypress	0	0	0	0	0	0
Shortleaf pine	0	0	0	0	0	0
Redcedar	531	531	0	0	0	0
Total	531	531	0	0	0	0
Hardwoods						
Ash	467	467	0	0	0	0
Basswood	8	8	0	0	0	0
Beech	7	7	0	0	0	0
Birch	60	60	0	0	0	0
Blackgum	121	121	0	0	0	0
Black cherry	50	50	0	0	0	0
Cottonwood	480	480	0	0	0	0
Elm	243	243	0	0	0	0
Pecan (hickory)	145	145	0	0	0	0
Other hickory	1,050	1,050	0	0	0	0
Hard maple	198	198	0	0	0	0
Soft maple	613	613	0	0	0	0
Red oak	24,479	24,479	0	0	0	0
White oak	7,097	7,097	0	0	0	0
Sweetgum	4,218	4,218	0	0	0	0
Sycamore	1,640	1,640	0	0	0	0
Black walnut	3,106	2,842	0	221	43	0
Yellow-poplar	0	0	0	0	0	0
Other hardwoods	10	10	0	0	0	0
Total	43,992	43,728	0	221	43	0
All species	44,523	44,259	0	221	43	0

(Table 7 continued on next page)

(Table 7 continued)

PRAIRIE UNIT

Species	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Ash	881	822	59	0	0	0
Basswood	230	178	52	0	0	0
Beech	25	25	0	0	0	0
Birch	1,513	1,475	38	0	0	0
Blackgum	29	29	0	0	0	0
Black cherry	38	34	4	0	0	0
Cottonwood	14,221	13,707	399	32	0	83
Elm	319	286	33	0	0	0
Pecan (hickory)	70	70	0	0	0	0
Other hickory	2,328	2,208	109	11	0	0
Hard maple	273	254	19	0	0	0
Soft maple	2,594	1,932	574	88	0	0
Red oak	20,303	19,687	540	76	0	0
White oak	9,136	8,447	666	23	0	0
Sweetgum	3,450	3,450	0	0	0	0
Sycamore	3,200	3,193	7	0	0	0
Black walnut	6,505	3,504	46	2,746	173	36
Yellow poplar	276	276	0	0	0	0
Other hardwoods	147	72	63	12	0	0
All species	65,538	59,649	2,609	2,988	173	119

(Table 7 continued)

(Table 7 continued)

Species	RIVERBORDER UNIT					
	Total	Missouri	Iowa	Kansas	Kentucky	Other States
Softwoods						
Cypress	0	0	0	0	0	0
Shortleaf pine	504	504	0	0	0	0
Redcedar	284	284	0	0	0	0
Total	788	788	0	0	0	0
Hardwoods						
Ash	1,319	1,319	0	0	0	0
Basswood	4	4	0	0	0	0
Beech	13	13	0	0	0	0
Birch	291	291	0	0	0	0
Blackgum	107	107	0	0	0	0
Black cherry	107	107	0	0	0	0
Cottonwood	6,344	6,344	0	0	0	0
Elm	141	141	0	0	0	0
Pecan (hickory)	5	5	0	0	0	0
Other hickory	1,200	1,197	0	0	0	3
Hard maple	833	833	0	0	0	0
Soft maple	2,109	2,109	0	0	0	0
Red oak	6,265	16,265	0	0	0	0
White oak	6,792	6,760	0	0	28	4
Sweetgum	101	101	0	0	0	0
Sycamore	2,701	2,701	0	0	0	0
Black walnut	538	255	0	0	99	184
Yellow-poplar	509	509	0	0	0	0
Other hardwoods	4	4	0	0	0	0
Total	39,383	39,065	0	0	127	191
All species	40,171	39,853	0	0	127	191

1/ International 1/4-inch rule.

Table 8.--Saw log receipts in Missouri by Inventory Unit, species, and State of origin, 1980

(In thousand board feet) 1/

ALL UNITS

Species	All States	Missouri	Illinois	Indiana	Arkansas	Kansas	Iowa	Oklahoma	Nebraska
Softwoods									
Shortleaf pine	27,398	27,398	0	0	0	0	0	0	0
Redcedar	3,140	3,140	0	0	0	0	0	0	0
Total	30,538	30,538	0	0	0	0	0	0	0
Hardwoods									
Ash	3,264	2,917	291	48	0	8	0	0	0
Basswood	212	205	6	0	0	1	0	0	0
Beech	171	45	125	0	0	1	0	0	0
Birch	2,129	1,884	241	0	1	3	0	0	0
Blackgum	2,191	2,191	0	0	0	0	0	0	0
Black cherry	390	365	16	9	0	0	0	0	0
Cottonwood	21,024	20,917	44	0	1	62	0	0	0
Elm	1,569	1,536	30	0	0	3	0	0	0
Pecan (hickory)	226	220	5	0	0	1	0	0	0
Other hickory	12,937	12,644	240	0	47	6	0	0	0
Hard maple	3,255	3,012	243	0	0	0	0	0	0
Soft maple	6,104	5,426	673	0	0	5	0	0	0
Red oak	234,013	228,327	4,148	425	818	295	0	0	0
White oak	59,857	55,674	2,353	1,531	253	46	0	0	0
Sweetgum	7,869	7,769	100	0	0	0	0	0	0
Sycamore	12,296	12,230	25	0	11	30	0	0	0
Black walnut	14,363	11,773	48	0	348	776	653	519	246
Yellow-poplar	1,216	785	431	0	0	0	0	0	0
Other hardwoods	100	100	0	0	0	0	0	0	0
Total	383,186	368,020	9,019	2,013	1,479	1,237	653	519	246
All species	413,724	398,558	9,019	2,013	1,479	1,237	653	519	246

(Table 8 continued on next page)

(Table 8 continued)

EASTERN OZARK UNIT

Species	All States	Missouri	Arkansas
Softwoods			
Shortleaf pine	17,729	17,729	0
Redcedar	77	77	0
Total	17,806	17,806	0
Hardwoods			
Ash	25	25	0
Blackgum	1,399	1,399	0
Black cherry	102	102	0
Cottonwood	248	248	0
Elm	439	439	0
Other hickory	5,852	5,844	8
Hard maple	1,325	1,325	0
Soft maple	489	489	0
Red oak	120,756	120,490	266
White oak	25,606	25,540	66
Sycamore	2,758	2,758	0
Black walnut	142	134	8
Total	159,141	158,793	348
All species	176,947	176,599	348

(Table 8 continued)

(Table 8 continued)

SOUTHWEST OZARK UNIT

Species	All States	Missouri	Arkansas	Oklahoma
Softwoods				
Shortleaf pine	8,695	8,695	0	0
Redcedar	2,241	2,241	0	0
Total	10,936	10,936	0	0
Hardwoods				
Ash	237	237	0	0
Basswood	14	14	0	0
Birch	80	79	1	0
Blackgum	558	558	0	0
Black cherry	94	94	0	0
Cottonwood	159	158	1	0
Elm	421	421	0	0
Other hickory	2,458	2,419	39	0
Hard maple	368	368	0	0
Soft maple	252	252	0	0
Red oak	50,910	50,358	552	0
White oak	8,392	8,205	187	0
Sycamore	2,525	2,514	11	0
Black walnut	5,878	5,198	340	340
Yellow-poplar	276	276	0	0
Total	72,622	71,151	1,131	340
All species	83,558	82,087	1,131	340

(Table 8 continued on next page)

(Table 8 continued)

NORTHWEST OZARK UNIT

Species	All States	Missouri
Softwoods		
Redcedar	531	531
Total	531	531
Hardwoods		
Ash	280	280
Blackgum	70	70
Cottonwood	280	280
Elm	350	350
Pecan (hickory)	192	192
Other hickory	1,026	1,026
Soft maple	745	745
Red oak	19,960	19,960
White oak	6,179	6,179
Sweetgum	4,218	4,218
Sycamore	811	811
Black walnut	20	20
Total	34,131	34,131
All species	34,662	34,662

(Table 8 continued)

(Table 8 continued)

PRAIRIE UNIT

Species	All States	Missouri	Illinois	Kansas	Iowa	Nebraska	Oklahoma
Ash	546	486	52	8	0	0	0
Basswood	198	191	6	1	0	0	0
Beech	33	32	0	1	0	0	0
Birch	1,880	1,637	240	3	0	0	0
Black cherry	5	5	0	0	0	0	0
Cottonwood	13,744	13,662	20	62	0	0	0
Elm	155	152	0	3	0	0	0
Pecan (hickory)	24	23	0	1	0	0	0
Other hickory	2,186	2,180	0	6	0	0	0
Hard maple	50	34	16	0	0	0	0
Soft maple	2,427	2,022	400	5	0	0	0
Red oak	19,932	18,846	791	295	0	0	0
White oak	8,993	8,419	528	46	0	0	0
Sweetgum	3,450	3,450	0	0	0	0	0
Sycamore	3,005	2,975	0	30	0	0	0
Black walnut	8,056	6,186	16	776	653	246	179
Other hardwood	100	100	0	0	0	0	0
All species	64,784	60,400	2,069	1,237	653	246	179

(Table 8 continued on next page)

(Table 8 continued)

Species	RIVERBORDER UNIT All States	Missouri	Illinois	Indiana
Softwoods				
Shortleaf pine	974	974	0	0
Redcedar	291	291	0	0
Total	1,265	1,265	0	0
Hardwoods				
Ash	2,176	1,889	239	48
Beech	138	13	125	0
Birch	169	168	1	0
Blackgum	164	164	0	0
Black cherry	189	164	16	9
Cottonwood	6,593	6,569	24	0
Elm	204	174	30	0
Pecan (hickory)	10	5	5	0
Other hickory	1,415	1,175	240	0
Hard maple	1,512	1,285	227	0
Soft maple	2,191	1,918	273	0
Red oak	22,455	18,673	3,357	425
White oak	10,687	7,331	1,825	1,531
Sweetgum	201	101	100	0
Sycamore	3,197	3,172	25	0
Black walnut	267	235	32	0
Yellow poplar	940	509	431	0
Total	52,508	43,545	6,950	2,013
All species	53,773	44,810	6,950	2,013

1/ International 1/4 - inch rule.

Table 9.--Pulpwood production in Missouri by species groups, 1965, 1970, 1975, and 1980

(In standard cords, unpeeled)

Species group	1965	1970	1975	1980
Roundwood				
Softwoods	253	301	187	766
Soft hardwoods	17,299	15,753	12,955	9,937
Hard hardwoods	2,427	9,714	9,854	13,981
Total	19,979	25,768	22,996	24,684
Residue				
Softwood	0	626	4,540	2,324
Hardwood	2,146	55,725	88,782	78,427
Total	2,146	56,351	93,322	80,751
All material	22,125	82,119	116,318	105,435

Table 10.- Charcoal wood production by species and Inventory Unit in Missouri, 1980

(In standard cords)

Species	All units	Eastern Ozarks	South-West Ozarks	North-West Ozarks	Prairie	River-border
Roundwood						
Shortleaf pine	613	460	153	0	0	0
Ash	633	186	0	265	0	182
Blackgum	498	263	235	0	0	0
Black cherry	322	247	75	0	0	0
Elm	823	301	235	159	0	128
Hickory	4,453	1,294	471	1,620	0	1,068
Hard maple	362	0	0	228	0	134
Soft maple	191	22	0	101	0	68
Red oak	49,392	28,976	9,293	7,679	0	3,444
White oak	28,879	20,002	3,038	4,117	0	1,722
Sycamore	1,922	1,214	248	322	0	138
Black walnut	300	225	75	0	0	0
Total	88,388	53,190	13,823	14,491	0	6,884
Residue						
Softwood	11,213	6,484	4,729	0	0	0
Hardwood	141,559	74,746	43,300	23,243	270	0
Total	152,772	81,230	48,029	23,243	270	0
All material	241,160	134,420	61,852	37,734	270	6,884

Table 11.--Veneer log production in Missouri by species, 1966, 1970, 1976, and 1980

(In thousand board feet)[1/]

Species	1966	1970	1976	1980
Ash	153	28	23	0
Gum	58	39	7	0
Black cherry	1	0	0	0
Cottonwood	2,122	705	110	1,072
Elm	[2/]	22	0	0
Hickory	177	629	187	94
Hard maple	97	0	0	0
Soft maple	98	121	53	0
Red oak	96	39	12	0
White oak	100	30	867	975
Sycamore	223	104	6	57
Black walnut	2,765	1,218	1,345	1,075
Yellow-poplar	1	46	25	0
Other hardwoods	638[3/]	14	0	2
All species	6,529	2,995	2,635	3,275

[1/] International 1/4-inch rule.

[2/] Included in other hardwoods.

[3/] Includes elm.

Table 12.-- Veneer log production by species and State of destination, Missouri, 1980

(In thousand board feet)[1/]

Species	Missouri	Indiana	Illinois	Ohio	Total
Cottonwood	1,072	0	0	0	1,072
Pecan (hickory)	0	62	0	0	62
Other hickory	0	32	0	0	32
White oak	704	147	124	0	975
Sycamore	57	0	0	0	57
Black walnut	344	554	154	23	1,075
Other hardwoods	0	2	0	0	2
All species	2,177	797	278	23	3,275

[1/] International 1/4-inch rule.

Table 13.--Industrial roundwood production by type of product, Inventory Unit, and species group, Missouri, 1980

Product and species group	Unit of measure	All Units	Eastern Ozarks Unit	South-western Ozarks Unit	North-western Ozarks Unit	Prairie Unit	River-border Unit
Saw logs	MBF[1/]						
Softwoods		30,836	18,710	10,807	531	0	788
Hardwoods		374,665	166,875	58,877	43,992	65,538	39,383
Total		405,501	185,585	69,684	44,523	65,538	40,171
Veneer logs	MBF[1/]						
Hardwoods		3,275	83	130	383	1,113	1,566
Pulpwood	Cords[2/]						
Softwoods		766	766	0	0	0	0
Hardwoods		23,918	7,407	0	0	11,248	5,263
Total		24,684	8,173	0	0	11,248	5,263
Charcoal wood	Cords[2/]						
Softwoods		613	460	153	0	0	0
Hardwoods		87,775	52,730	13,670	14,491	0	6,884
Total		88,388	53,190	13,823	14,491	0	6,884
Cooperage logs	MBF[1/]						
Hardwood		28,473	9,923	4,959	3,818	5,431	4,342
Posts	M pieces[3/]						
Softwoods		695	407	174	114	0	0
Hardwoods		2,140	554	178	1,408	0	0
Total		2,835	961	352	1,522	0	0
Other	MCF[4/]						
Softwoods		152	0	28	99	0	25
Hardwoods		399	51	21	15	183	129
Total		551	51	49	114	183	154
All products	MCF[4/]						
Softwoods		6,272	3,660	2,139	301	0	172
Hardwoods		81,286	35,975	12,500	10,369	13,594	8,848
Total		87,558	39,635	14,639	10,670	13,594	9,020

[1/] Thousand board feet, International 1/4-inch rule.

[2/] Standard cords, unpeeled.

[3/] Thousand pieces.

[4/] Thousand cubic feet.

Table 14.--Residue produced at primary wood-using mills by type of material, type of use, and Inventory Unit, Missouri, 1980

(In thousand tons green weight)

Unit and type of use	Wood residue							
	Total		Coarse[1]		Fine[2]		Bark[3]	
	softwood	hardwood	softwood	hardwood	softwood	hardwood	softwood	hardwood
Eastern Ozark Unit								
Fiber products	7.27	74.11	7.27	74.11	0	0	.36	0
Charcoal	12.66	146.04	9.98	126.54	2.68	19.50	3.72	50.89
Industrial fuel	1.47	17.21	0	.34	1.47	16.87	1.03	10.95
Domestic fuel	.08	3.86	.08	3.86	0	0	.02	1.67
Miscellaneous [4]	1.02	5.31	0	.24	1.02	5.07	.81	4.71
Not used	15.25	119.58	6.51	19.31	8.74	100.27	4.80	29.36
Total	37.75	366.11	23.84	224.40	13.91	141.71	10.74	97.58
Southwest Ozark Unit								
Fiber products	.87	1.38	.87	1.38	0	0	0	0
Charcoal	9.23	84.61	8.96	83.26	.27	1.35	3.82	34.84
Industrial fuel	.17	6.73	.17	3.68	0	3.05	.04	1.57
Domestic fuel	1.34	8.59	1.34	8.59	0	0	.46	3.57
Miscellaneous [4]	3.04	22.31	.62	0	2.42	22.31	.89	.15
Not used	8.52	33.99	2.68	1.83	5.84	32.16	1.08	1.86
Total	23.17	157.61	14.64	98.74	8.53	58.87	6.29	41.99
Northwest Ozark Unit								
Charcoal	0	45.43	0	45.43	0	0	0	20.01
Industrial fuel	.03	0	.03	0	0	0	0	0
Domestic fuel	.58	3.28	.58	3.28	0	0	.14	2.02
Miscellaneous [4]	.43	10.33	.03	0	.40	10.33	.01	1.72
Not used	.07	33.42	.07	4.65	0	28.77	.02	2.53
Total	1.11	92.46	.71	53.36	.40	39.10	.17	26.28
Prairie Unit								
Fiber products	0	43.47	0	43.47	0	0	0	.71
Charcoal	0	.53	0	.53	0	0	0	.22
Industrial fuel	0	4.19	0	0	0	4.19	0	2.76
Domestic fuel	0	20.08	0	20.08	0	0	0	8.06
Miscellaneous [4]	0	12.77	0	0	0	12.77	0	4.21
Not used	0	73.37	0	29.20	0	44.17	0	25.13
Total	0	154.41	0	93.28	0	61.13	0	41.09
Riverborder Unit								
Fiber products	1.30	64.04	1.30	64.04	0	0	0	0
Industrial fuel	.01	12.95	.01	1.19	0	11.76	0	7.28
Domestic fuel	.36	9.39	.36	9.39	0	0	.09	4.09
Miscellaneous [4]	.26	23.09	.02	.74	.24	22.35	.05	19.12
Not used	.76	19.86	0	1.90	.76	17.96	.49	2.91
Total	2.69	129.33	1.69	77.26	1.00	52.07	.63	33.40
All Units								
Fiber products	9.44	183.00	9.44	183.00	0	0	.36	.71
Charcoal	21.89	276.61	18.94	255.76	2.95	20.85	7.54	105.96
Industrial fuel	1.68	41.08	.21	5.21	1.47	35.87	1.07	22.56
Domestic fuel	2.36	45.20	2.36	45.20	0	0	.71	19.41
Miscellaneous [4]	4.75	73.81	.67	.98	4.08	72.83	1.76	29.91
Not used	24.60	280.22	9.26	56.89	15.34	223.33	6.39	61.79
Total	64.72	899.92	40.88	547.04	23.84	352.88	17.83	240.34

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Does not include bark at pulpmills.

[4] Livestock bedding, mulch, small dimension, and specialty items.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1983—765-022/5092

Blyth, James E.; Jones, Shelby; Smith, W. Brad.
Primary forest products industry and timber use, Missouri, 1980. Resour. Bull. NC-71. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1983. 22 p.

Discusses recent Missouri forest industry trends; timber removals for industrial roundwood in 1980; and production and receipts of saw logs, pulpwood, cooperage logs, charcoal wood, and other industrial roundwood products. Reports on associated primary mill wood and bark residue and the disposition of mill residue.

KEY WORDS: Saw logs, pulpwood, cooperage, charcoal, mill residue, timber removals